Louisiana Department of Environmental Quality (LDEQ)
Office of Environmental Services

STATEMENT OF BASIS

E.I. DuPont De Nemours & Co., Inc.
Diamines Unit, Pontchartrain Site
Laplace, St. John the Baptist Parish, Louisiana

Agency Interest Number: 1101
Activity Number: PER20070004
Proposed Permit Number: 2090-V2

I. APPLICANT

Company:
E.I. DuPont De Nemours & Co., Inc.
586 Highway 44, LaPlace, LA 70068

Facility:
Diamines Unit
586 Highway 44, LaPlace, St. John the Baptist Parish, Louisiana
Approximate UTM coordinates are 739.0 kilometers East and 3,327.4 kilometers North, Zone 15

II. FACILITY AND CURRENT PERMIT STATUS

E.I. DuPont de Nemours & Co. (DuPont) operates the Diamines and the Business Development Units as well as utility facilities in the Power Unit in LaPlace, Louisiana. This Operating Permit is for the Diamines Unit. The Diamines Unit currently operates under Part 70 Operating Permit No. 2090-V1 issued May 2, 2007.

Other Part 70 permits addressing portions of the facility have been issued. These include:

Permit No.	Units or Sources	Date issued
2298-V0	Business Development Unit	06/06/2005
896-V0	Power Unit	09/28/2005

E.I. DuPont De Nemours & Co., Inc.
Diamines Unit, Pontchartrain Site
Laplace,St. John the Baptist Parish, Louisiana
Agency Interest Number: 1101

III. PROPOSED PROJECT/PERMIT INFORMATION

Proposed Permit

E.I. DuPont de Nemours & Co. submitted a permit application and Emission Inventory Questionnaire (EIQ) dated November 1, 2007, requesting a Part 70 Operating Permit renewal and modification. Additional information dated March 24, 2008 was also received.

Project Description

This permit renewal proposes:

1-To increase the operating time of the Product Loading Scrubber (1500-45);
2-To update regulatory tables for IPP Column (1500-34J) for NSPS Subpart NNN applicability from "does not apply" to "exempt"; and
3-To update VOC speciation for Flares No. 1 and 2 (1500-34 & 1500-66).

Existing Process

The Diamines facility was originally designed to produce p-Phenylenediamine (PPDA) from ammonia and aniline. In the current process, ammonia is reacted with aniline using a DuPont proprietary process to produce p-Phenylenediamine by a sequence of reaction steps. The stream from the reactor is flashed to remove light ends and distilled to produce the final product (PPDA) and co-products MPDA (m-Phenylenediamine), OPDA (o-Phenylenediamine) and benzene.

Reactor and distillation vent streams pass through dedicated scrubbers and/or flares prior to release to the atmosphere. Wherever possible, ammonia, which is used in the process, is recovered and recycled back to the process. Unrecoverable ammonia is either abated or flared.

The Diamines facility produces alternate diamines as market conditions change, so long as specified permit limits are not exceeded. Under LAC 33:III.507.G.5, DuPont alternates operating scenarios by using the existing equipment to produce alternate products and co-products from time to time. Such changes are documented.

The table below lists the possible campaigns DuPont might run in the Diamines Unit, other than normal PPDA production. Since the campaigns involve production or rework of isomers of p-Phenylenediamine (PPDA), the associated emissions are not expected to change.

Unit	Campaign Designation	Product	Amount (MM LBS/YR)	Operation
PPDA	Rework of Offsite MPDA (m-phenylenediamine)	MPDA	1-5	Rework
PPDA	Production of x - isomer	OPDA MPDA	1-5	Production

Flammable Vent Header Flare No. 2 (1500-66) is used as the primary flare, with Flammable Vent Header Flare No. 1 (1500-34) as the alternate, to be used when the primary flare is out of service. As a result, there is only one flare in operation at any given time. Also, the Truck Loading Scrubber (1500-65) is used in alternate service with the Product Storage Tank Scrubber (1500-11). Emissions from both flares and both scrubbers are capped for operational flexibility and to avoid over permitting these sources.

Some tanks are also used in alternate service in the Diamines Unit. The Crude/No.3 Product Storage Tank (1500-8A) may be used to store either crude material or product. The Aniline Storage Tank (1500-9) may also be used for Fuel Oil Storage. The Specialty Storage Tank (1500-54B) is primarily used as Aqueous Waste Tank and may also be used for Fuel Oil Storage. Each one of the above tanks' EIQs lists the emissions from the operating scenario that provides the highest potential to emit.

The Waste Heat Generator (1500-12) and the Product Loading Scrubber (1500-45) are pollution control devices shared by the Diamines Unit and the Business Development Unit. The EIQs for these sources list the combined emissions from both units. The combined emissions have been included in the Diamines Unit permit since the majority of the emissions come from this unit.

Products from the Diamines Unit are shipped out of the facility by truck or railcar. Vapors from truck loading return to the storage tank vent scrubber. Railcar loading vapors pass through a dedicated loading scrubber.

Permitted Air Emissions

Estimated emissions from the Diamines Unit in tons per year are as follows:

Pollutant	Before	After	Change
PM_{10}	0.854	0.854	-
SO_2	0.144	0.144	-
NO_X	279.66	279.66	-
CO	15.59	15.59	-
VOC	13.52	13.72*	+ 0.2
Nitric Acid	0.056	0.056	-
Ammonia	33.93	33.93	-

IV. REGULATORY ANALYSIS

The applicability of the appropriate regulations is straightforward and provided in the Specific Requirements section of the proposed permit. Similarly, the Monitoring, Reporting and Recordkeeping necessary to demonstrate compliance with the applicable terms, conditions and standards are also provided in the Specific Requirements section of the proposed permit.

E.I. DuPont De Nemours & Co., Inc.
Diamines Unit, Pontchartrain Site
Laplace,St. John the Baptist Parish, Louisiana
Agency Interest Number: 1101

Applicability and Exemptions of Selected Subject Items

ID No:	Applicable Requirement	Compliance Method/Provisions	Notes
EQT008 **1500-3** Abator Stack	Control of Air Pollution from Smoke LAC 33:III.1101	Smoke from any combustion unit shall be controlled so that the shade or appearance of the emission is not darker than 20% average opacity. (LAC 33:III.1101.B)	
	Waste Gas Disposal LAC 33:III.2115	EXEMPT. The waste gas stream has a combined weight of VOC less than 100 pounds in any continuous 24-hour period. (LAC 33:III.2115.H.1.c)	Recordkeeping is required This vent services acid scrubber 1500-3A
	Comprehensive TAP Emission Control Program LAC 33:III.5109	HON Group 2 process vent meeting the requirements of 40 CFR 63.100, 113(a)(3) and 113(e) is routed to this source. No additional controls are required.	Aniline emissions from acid scrubber 1500-3A prior to the abator are included with source 1500-3. The acid scrubber recovers aniline from several vent streams. One of these streams contains NOx. The stream leaving the scrubber is then routed to the abator to turn any remaining NOx into nitrogen and water vapor before venting to the vent stack.
EQT010 1500-3A Acid Scrubber	Waste Gas Disposal LAC 33:III.2115	EXEMPT. The waste gas stream has a combined weight of VOC less than 100 pounds in any continuous 24-hour period. (LAC 33:III.2115.H.1.c)	
	Limiting VOC Emissions from Reactor Processes and Distillation Operations LAC 33:III.2147	DOES NOT APPLY. The facility is not located in one of the affected parishes as outlined in LAC 33:III.2147.A.1	
	Comprehensive TAP Emission Control Program LAC 33:III.5109	Comply with NESHAP (HON) Subparts F and G, 40 CFR 63.100, 113(a)(3) and 113(e)	Source emits aniline
	NSPS Subpart RRR – SOCMI Reactor Processes 40 CFR 60.700	DOES NOT APPLY. Reactor venting thru this source was constructed prior to 6/29/90 and has not been modified.	
	NESHAP (HON) Subparts F and G for Process Vents 40 CFR 63.100, 113(a)(3) and 113(e)	Group 2 process vent. TRE calculation, reporting and recordkeeping are required.	TRE > 4.0 The acid scrubber is the final recovery device for process vent 1500-3A1 (DC Reactor/Rearranger Reactor Purge)
EQT031, EQT032 **1500-66** FVH Flare No.2 **1500-34** FVH Flare No.1	Smoke from Flaring LAC 33:III.1105	Smoke from a flare shall be controlled so that the shade or appearance of the emission does not exceed 20 percent opacity (LAC 33:III.1503.Table 4) for a combined total of six hours in any 10 consecutive days.	Compliance is assured by use of sweet natural gas as fuel
	Emission Standards for Sulfur Dioxide LAC 33:III.1502	DOES NOT APPLY. Single point source emits or has the potential to emit < 5 tpy of sulfur dioxide. (LAC 33:III.1502.A.3)	Flare emits < 5 tpy

E.I. DuPont De Nemours & Co., Inc.
Diamines Unit, Pontchartrain Site
Laplace,St. John the Baptist Parish, Louisiana
Agency Interest Number: 1101

ID No:	Applicable Requirement	Compliance Method/Provisions	Notes
EQT031, EQT032 **1500-66** FVH Flare No.2 **1500-34** FVH Flare No.1 (Continued)	Storage of Volatile Organic Compounds LAC 33:III.2103	This flare is the control device for benzene storage tank 1500-34C under LAC 33:III.2103.A	
	Comprehensive TAP Emission Control Program, LAC 33:III.5109	Comply with applicable HON provisions.	
	NSPS Subpart A – General Provisions, 40 CFR 60.18	Flare shall meet the specifications described in the general control device requirements of 60.18(b).	Flare is part of a closed vent header that is used to control benzene emissions from benzene tank 1500-34C subject to 40 CFR 61 Sub Y
	NESHAP Subpart Y for Benzene Storage Vessels 40 CFR 61.271	Flare shall comply with the provisions in 40 CFR 60.18 of Subpart A in accordance with 61.271(c)(2).	
	NESHAP (HON) Subpart A - General Provisions, 40 CFR 63.11	Flare shall meet the specifications described in the control device requirements of 63.11(b).	
	NESHAP (HON) Subpart F and G for Process Vents 40 CFR 63.100 and 113(a)(1)	Flare shall comply with the provisions in 63.11(b) of Subpart A in accordance with 63.116(a).	Control device for Group 1 process vents 1500-34I, 1500-34J, 1500-34K, and 1500-34L
EQT035 1500-34C Benzene Storage Tank	Storage of Volatile Organic Compounds LAC 33:III.2103	Storage vessel > 250 gals and vapor pressure >1.5 psia must be equipped with a submerged fill pipe or a vapor loss control system. Tank vents to flare with > 98% efficiency. (LAC 33:III.2103.A)	Vapor pressure = 1.54 psia
	Comprehensive TAP Emission Control Program, LAC 33:III.5109	Comply with NESHAP (HON) Subparts F and G, 40 CFR 63.100 and 119(a)(3)	Source emits benzene
	NSPS Subpart K - Standards of Performance for Storage Vessels for Petroleum Liquids 40 CFR 60.110	DOES NOT APPLY. This tank does not store Petroleum Liquids.	
	NSPS Subpart Ka - Standards of Performance for Storage Vessels for Petroleum Liquids 40 CFR 60.110a	DOES NOT APPLY. This tank does not store Petroleum Liquids.	
	NSPS Subpart Kb - Standards of Performance for Volatile Organic Liquid Storage Vessels 40 CFR 60.110b	DOES NOT APPLY. Tank capacity < 75 m^3 (20,000 gallons).	Tank capacity = 12,043 gals Vapor pressure = 1.54 psia Tank in service since 1980
	NESHAP Subpart Y for Benzene Storage Vessels, 40 CFR 61.270	Tank vents to flare with > 98% efficiency. Tank shall comply with the requirements in 61.271(c)(1) thru (c)(4).	Tank stores 98% benzene
	NESHAP (HON) Subparts F and G for Storage Vessels, 40 CFR 63.100 and 119(a)(3)	Group 2 storage vessel. Recordkeeping is required.	
EQT040 thru EQT043 1500-34I High Boiler Column 1500-34J IPP Column 1500-34K Low Boiler Column 1500-34L Refining Column	Waste Gas Disposal LAC 33:III.2115	DOES NOT APPLY. The waste gas stream is required by the HON to implement controls that reduce VOCs to a more stringent standard than required by Section 2115.	
	Limiting VOC Emissions from Reactor Processes and Distillation Operations LAC 33:III.2147	DOES NOT APPLY. The facility is not located in one of the affected parishes as outlined in LAC 33:III.2147.A.1	

E.I. DuPont De Nemours & Co., Inc.
Diamines Unit, Pontchartrain Site
Laplace,St. John the Baptist Parish, Louisiana
Agency Interest Number: 1101

ID No:	Applicable Requirement	Compliance Method/Provisions	Notes
EQT040 thru EQT043 1500-34I High Boiler Column 1500-34J IPP Column 1500-34K Low Boiler Column 1500-34L Refining Column (Continued)	Comprehensive TAP Emission Control Program, LAC 33:III.5109	Comply with NESHAP (HON) Subparts F and G, 40 CFR 63.100 and 113(a)(1)	I and J emit aniline & PPDA, K emits benzene, L emits aniline
	NSPS Subpart NNN – Distillation Operations 40 CFR 60.660	DOES NOT APPLY. Distillation units 1500-34I, 1500-34K and 1500-34L have not been modified or reconstructed since 12/30/83.	Units were constructed prior to 1983 except 1500-34J
		EXEMPT. Column 1500-34J was built in 1986; however, the IPP Column is a Group 1 process vent and is required to comply only with the HON. [40 CFR 63.110(d)(4)]	
	NESHAP (HON) Subparts F and G for Process Vents, 40 CFR 63.100 and 113(a)(1)	The final control device for the process vent is the flare.	Group 1 process vent

Streamlined Equipment Leak Monitoring Program

Unit	Programs Being Streamlined	Stream Applicability	Overall Most Stringent Program
Diamines Unit	40 CFR 63 Sub H-HON	5% VOHAP	40 CFR 63 Subpart H-HON
	40 CFR 60 Sub VV	10% VOC	
	LAC 33:III.2121	10% VOC	

Prevention of Significant Deterioration Applicability

N/A

MACT Requirements

The DuPont site is a major source of toxic air pollutants (TAPs). The Diamines Unit emits ammonia, aniline, and benzene above their respective minimum emission rate (MER). Therefore, the Diamines Unit shall comply with all applicable provisions of the Louisiana Air Toxics Program, LAC 33:III.Chapter 51, regarding these compounds.

The Diamines Unit is a Synthetic Organic Chemical Manufacturing Industry (SOCMI) facility. The Diamines Unit shall comply with the applicable provisions of the National Emission Standards for Organic Hazardous Air Pollutants, 40 CFR 63 Subparts F, G and H for process vents, storage vessels, transfer operations, wastewater and equipment leaks.

E.I. DuPont De Nemours & Co., Inc.
Diamines Unit, Pontchartrain Site
Laplace,St. John the Baptist Parish, Louisiana
Agency Interest Number: 1101

Air Quality Analysis

Emissions associated with the proposed modification were reviewed by the Air Quality Assessment Division to ensure compliance with the NAAQS and AAS. LDEQ did not require the applicant to model emissions.

Dispersion Model(s) Used: None

Pollutant	Time Period	Calculated Maximum Ground Level Concentration	Louisiana Air Quality Standard (NAAQS)

General Condition XVII Activities

The facility will comply with the applicable General Condition XVII Activities emissions as required by the operating permit rule. However, General Condition XVII Activities are not subject to testing, monitoring, reporting or recordkeeping requirements. For a list of approved General Condition XVII Activities, refer to the Section VIII – General Condition XVII Activities of the proposed permit.

Insignificant Activities

All Insignificant Activities are authorized under LAC 33:III.501.B.5. For a list of approved Insignificant Activities, refer to the Section IX – Insignificant Activities of the proposed permit.

V. PERMIT SHIELD

N/A

VI. PERIODIC MONITORING

Periodic monitoring is required for certain sources in this permit. All periodic monitoring shall be conducted in accordance with state and federal regulations, as applicable. See the Facility Specific Requirements of the draft Part 70 permit for monitoring requirements.

E.I. DuPont De Nemours & Co., Inc.
Diamines Unit, Pontchartrain Site
Laplace,St. John the Baptist Parish, Louisiana
Agency Interest Number: 1101

VII. Glossary

Best Available Control Technologies (BACT) - An emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under this part which would be emitted from any proposed major stationary source or major modification which the administrative authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant.

CAM - Compliance Assurance Monitoring rule – A federal air regulation under 40 CFR Part 64

Carbon Black - A black colloidal substance consisting wholly or principally of amorphous carbon and used to make pigments and ink.

Carbon Monoxide (CO) – (Carbon monoxide) a colorless, odorless gas produced by incomplete combustion of any carbonaceous (gasoline, natural gas, coal, oil, etc.) material.

Cooling Tower – A cooling system used in industry to cool hot water (by partial evaporation) before reusing it as a coolant.

Continuous Emission Monitoring System (CEMS) – The total combined equipment and systems required to continuously determine air contaminants and diluent gas concentrations and/or mass emission rate of a source effluent.

Cyclone – A control device that uses centrifugal force to separate particulate matter from the carrier gas stream.

Duct Burner – A device that combusts fuel and that is placed in the exhaust duct from another source (such as a stationary gas turbine, internal combustion engine, kiln, etc.) to allow the firing of additional fuel to heat the exhaust gases before the exhaust gases enter a steam generating unit.

Federally Enforceable Specific Condition - A federally enforceable specific condition written to limit the potential to Emit (PTE) of a source that is permanent, quantifiable, and practically enforceable. In order to meet these requirements, the draft permit containing the federally enforceable specific condition must be placed on public notice and include the following conditions:

- A clear statement of the operational limitation or condition which limits the source's potential to emit;
- Recordkeeping requirements related to the operational limitation or condition;
- A requirement that these records be made available for inspection by LDEQ personnel;
- A requirement to report for the previous calendar year.

E.I. DuPont De Nemours & Co., Inc.
Diamines Unit, Pontchartrain Site
Laplace,St. John the Baptist Parish, Louisiana
Agency Interest Number: 1101

Grandfathered Status- Those facilities that were under actual construction or operation as of June 19, 1969, the signature date of the original Clean Air Act. These facilities are not required to obtain a permit. Facilities that are subject to Part 70 (Title V) requirements lose grandfathered status and must apply for a permit.

Heat Recovery Steam Generator (HRSG) – A steam generator that recovers exhaust heat from a gas turbine, and provides economizing and steam generation surfaces.

Hydrogen Sulfide (H_2S) - A colorless inflammable gas having the characteristic odor of rotten eggs, and found in many mineral springs. It is produced by the action of acids on metallic sulfides, and is an important chemical reagent.

Maximum Achievable Control Technology (MACT) - The maximum degree of reduction in emissions of each air pollutant subject to LAC 33:III.Chapter 51 (including a prohibition on such emissions, where achievable) that the administrative authority, upon review of submitted MACT compliance plans and other relevant information and taking into consideration the cost of achieving such emission reduction, as well as any non-air-quality health and environmental impacts and energy requirements, determines is achievable through application of measures, processes, methods, systems, or techniques.

NESHAP - National Emission Standards for Hazardous Air Pollutants –Air emission standards for specific types of facilities, as outlined in 40 CFR Parts 61 through 63

Nitrogen Oxides (NO_x) - Compounds whose molecules consist of nitrogen and oxygen.

Nonattainment New Source Review (NNSR) - A New Source Review permitting program for major sources in geographic areas that do not meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. Nonattainment NSR is designed to ensure that emissions associated with new or modified sources will be regulated with the goal of improving ambient air quality.

NSPS - New Source Performance Standards – Air emission standards for specific types of facilities, as outlined in 40 CFR Part 60

Organic Compound - Any compound of carbon and another element. Examples: Methane (CH_4), Ethane (C_2H_6), Carbon Disulfide (CS_2)

Part 70 Operating Permit - Also referred to as a Title V permit, required for major sources as defined in 40 CFR 70 and LAC 33:III.507. Major sources include, but are not limited to, sources which have the potential to emit: $\geq$ 10 tons per year of any toxic air pollutant; $\geq$ 25 tons of total toxic air pollutants; and $\geq$ 100 tons per year of regulated pollutants (unless regulated solely under 112(r) of the Clean Air Act) (25 tons per year for sources in non-attainment parishes).

PM_{10} - Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by the method in Title 40, Code of Federal Regulations, Part 50, Appendix J.

Potential to Emit (PTE) - The maximum capacity of a stationary source to emit any air pollutant under its physical and operational design.

Prevention of Significant Deterioration (PSD) – A New Source Review permitting program for major sources in geographic areas that meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. PSD requirements are designed to ensure that the air quality in attainment areas will not degrade.

Selective Catalytic Reduction (SCR) – A noncombustion control technology that destroys NO_X by injecting a reducing agent (e.g., ammonia) into the flue gas that, in the presence of a catalyst (e.g., vanadium, titanium, or zeolite), converts NO_X into molecular nitrogen and water.

Sulfur Dioxide (SO_2) – An oxide of sulphur.

TAP - Toxic Air Pollutant (LDEQ acronym for air pollutants regulated under LAC 33 Part III, Chapter 51, Tables 1 through 3.

Title V permit – See Part 70 Operating Permit.

"Top Down" approach – An approach which requires use of the most stringent control technology found to be technically feasible and appropriate based on environmental, energy, economic, and cost impacts.

Turbine – A rotary engine in which the kinetic energy of a moving fluid is converted into mechanical energy by causing a bladed rotor to rotate.

Volatile Organic Compound (VOC) - Any organic compound which participates in atmospheric photochemical reactions; that is, any organic compound other than those which the administrator of the U.S. Environmental Protection Agency designates as having negligible photochemical reactivity.